

IN THE CLAIMS:

Please cancel claim 35, 36, 38, and 41. Please amend claims 1, 21, 34, 39, and 43. Claims 2-20, 22-33, 40, and 42 are presented below but they have not been amended. New claims 44-47 are added below.

1. (Four times amended) A hub for mounting a pulley, gear, or wheel on a shaft having a keyway, said hub comprising:

a first opening extending axially into said hub, said first opening comprising an inner surface for disposing said hub on the shaft, said first opening having a first end and a second end;

an integral key extending radially inward from said inner surface, said integral key extending at least part of the way along said inner surface between said first end and said second end for engaging the keyway for preventing relative rotation between said hub and the shaft when said hub is disposed on the shaft;

an integral stop extending across at least a portion of said first end for preventing the shaft from extending beyond said hub when said hub is disposed on the shaft; and

a mounting surface for mounting the pulley, gear, or wheel on said hub, wherein said mounting surface is located so the shaft extends through the pulley, gear, or wheel when the pulley, gear, or wheel is mounted on said mounting surface, and when said hub is disposed on the shaft, and when the shaft extends to said integral stop.

2. A hub as recited in claim 1, wherein said integral key extends from said first end to said second end of said first opening.

3. A hub as recited in claim 1, further comprising a second opening extending through said integral stop, said second opening communicating with said first opening.
4. An assembly comprising a hub as recited in claim 3, in combination with said shaft and a bolt, wherein said shaft has a tapped hole in said shaft end, whereby said second opening provides access to said tapped hole in said shaft end by said bolt for fastening said hub to said shaft.
5. A hub as recited in claim 3, wherein said second opening is at least partially aligned with said integral key.
6. A hub as recited in claim 3, wherein said integral key extends at least into said second opening.
7. A hub as recited in claim 6, wherein said second opening has a round shape and said second opening is disposed concentrically with said first opening.
8. A hub as recited in claim 6, wherein at least a portion of said second opening has a pie shape and the pie-shaped portion of said second opening is disposed concentrically with said integral key.
9. A hub as recited in claim 6, wherein said integral stop extends across only a portion of one of said first and second ends of said first opening, said integral stop being bounded by a chord extending across said one of said first and second ends of said first opening, said second opening having a segment shape bounded by said chord.
10. A hub as recited in claim 9, wherein said second opening is disposed concentrically with said integral key.

11. A hub as recited in claim 3, wherein said integral key extends through said second opening.

12. A hub as recited in claim 3, wherein said second opening is circular and said second opening has a diameter smaller than said first opening.

13. A hub as recited in claim 12, wherein said second opening is concentric with said first opening.

14. A hub as recited in claim 1, said hub being formed by a powder metallurgy process.

15. A hub as recited in claim 14, said hub being formed by the steps of:

- a) providing a mold,
- b) filling said mold with metal powder of suitable composition, particle size, and particle shape,
- c) compacting said metal powder in said mold at suitable time and pressure to form a preform,
- d) removing said preform from said mold,
- e) providing a non-oxidizing atmosphere, and
- f) applying heat to said preform at suitable time and temperature in said non-oxidizing atmosphere to sinter said metal powder.

16. A hub as recited in claim 15, wherein said metal powder is nickel steel powder having a composition by weight of 91.9% to 98.7% Fe, 1.0% to 3.0% Ni, 0.3% to 0.6% C, zero to 2.5% Cu, and any other elements taken together totaling no more than 2.0% maximum.

17. A hub as recited in claim 1, having an outer surface, said hub further comprising a hole communicating between said inner surface of said opening and said outer surface, said hole being tapped with internal threads for a conventional setscrew, said hole being suitably disposed for attaching said hub to said shaft wherein said hub is prevented from moving axially relative to said shaft.

18. A pulley comprising:

- a) a hub as recited in claim 1, and
- b) a disk-shaped body having a rim formed with a peripheral recess for receiving a pulley belt, said disk-shaped body being affixed to said hub.

19. A pulley as recited in claim 18, wherein said disk-shaped body is affixed to said hub by a weld.

20. A pulley as recited in claim 18, wherein said disk-shaped body is affixed to said hub by pressing.

21. (Four times Amended) A machine, comprising:

a hub;

a pulley, gear, or wheel mounted on said hub;

a shaft extending through said hub and through said pulley, gear, or wheel, said shaft having a shaft end;

a first opening extending axially into said hub, said first opening having an inner surface for disposing said hub on said shaft, said first opening having a first end and a second end; and

an integral stop extending across only a portion of said first end, said integral stop for preventing said shaft from extending beyond said hub.

22. (Amended) A machine as recited in claim 21, further comprising means integral with said inner surface of said first opening for preventing relative rotation of said hub on said shaft when said hub is disposed on said shaft.

22. (Amended) A machine as recited in claim 22, said means integral with said inner surface comprising one or more flat surfaces.

23. (Amended) A machine as recited in claim 23, said one or more flat surfaces together forming said first opening having a generally polygonal cross-section.

24. (Amended) A machine as recited in claim 22, said means integral with said inner surface comprising one or more splines.

25. (Amended) A machine as recited in claim 21, said hub having an outer peripheral surface portion concentric with said first opening, said outer peripheral surface portion having a right circular cylindrical form.
26. (Amended) A machine as recited in claim 21, said hub having an outer peripheral surface portion concentric with said first opening, said outer peripheral surface portion having a right elliptical cylindrical form.
27. (Amended) A machine as recited in claim 21, said hub having an outer peripheral surface portion concentric with said first opening, said outer peripheral surface portion having a pyramidal form.
28. (Amended) A machine as recited in claim 21, said hub having an outer peripheral surface portion concentric with said first opening, said outer peripheral surface portion having a conical form.
29. (Amended) A machine as recited in claim 21, said hub having an outer peripheral surface portion concentric with said first opening, said outer peripheral surface portion having a splined form.
30. A gear comprising:
- a) a hub as recited in claim 1, and
 - b) a disk-shaped body having a rim formed with gear teeth, said disk-shaped body being affixed to said hub.
32. A gear as recited in claim 31, wherein said disk-shaped body is affixed to said hub by a weld.

33. A gear as recited in claim 31, wherein said disk-shaped body is affixed to said hub by pressing.

34. (Three times Amended) A hub for mounting a device on a shaft, the hub comprising a first face and a second face, an opening extending there between, said opening having a length between said first face and said second face, said opening comprising an inner surface, an integral key extending radially inward from said inner surface, said integral key extending at least part of the way between said first face and said second face, said opening and said integral key for receiving a shaft having a keyway, said hub further comprising an integral stop extending across at least a portion of said opening for preventing the shaft from extending beyond said hub when said hub is disposed on the shaft, said hub further comprising a mounting surface for mounting the device on said hub, wherein said mounting surface is located on said hub so the shaft extends through the device when the device is mounted on said hub, and when said hub is disposed on the shaft, and when the shaft extends to said integral stop.

39. (Amended) A hub for mounting on a shaft, the shaft having a shaft end, said hub comprising:

a first opening extending axially into said hub, said first opening having an inner surface for disposing said hub on the shaft, said first opening having a first end and a second end;

an integral stop extending across only a portion of said first end, said integral stop for preventing the shaft from extending beyond said hub when said hub is disposed on the shaft; and

a device mounted on said hub;

wherein the shaft extends through said device when said hub is disposed on the shaft and the shaft extends to said integral stop.

40. (Amended) A hub as recited in claim 39, wherein said hub further comprises a mounting surface having a position for mounting said device on the hub.

42. A hub as recited in claim 39, further comprising means integral with said inner surface of said first opening for preventing relative rotation of said hub on the shaft when said hub is disposed on the shaft.

43. (Amended) A method of fabricating a hub for mounting a pulley, gear, or wheel on a shaft having a shaft end, the method comprising the steps of:

- a) providing a mold;
- b) filling said mold with a material;
- c) processing to form a hub, wherein said hub comprises:

a mounting surface for mounting the pulley, gear, or wheel thereto;

a first face and a second face and an opening extending from said first face toward said second face, said opening for receiving the shaft, said opening comprising an inner surface extending parallel to an axis of said opening;

an integral key extending along said inner surface, said integral key extending at least part of the way along said inner surface between said first face and said second face; and

an integral stop extending across a portion of one of said first and second faces of said opening for preventing the shaft from moving beyond said integral stop, wherein said mounting surface is located so that when the pulley, gear, or wheel is mounted on said mounting surface, and when said hub is disposed on the shaft and the shaft extends to said integral stop, the shaft extends through the pulley, gear, or wheel.

Please add the following new claims:

44. A hub as recited in claim 1, further comprising said shaft and said pulley, gear, or wheel, wherein said pulley, gear, or wheel is mounted on said mounting surface, and said hub is disposed on said shaft, and said shaft extends to said integral stop.
45. A hub as recited in claim 34, further comprising said shaft and said device, wherein said device is mounted on said mounting surface, and said hub is disposed on said shaft, and said shaft extends to said integral stop.
46. A hub as recited in claim 39, further comprising said shaft, wherein said hub is disposed on said shaft, and said shaft extends to said integral stop.
47. A method as recited in claim 43, further comprising the steps of mounting said pulley, gear, or wheel on said mounting surface, disposing said hub on said shaft, and extending said shaft to said integral stop.